How will my child benefit?

- Pioneer in nutrition science
- Fun and interesting tests
- Learn about science and doing experiments
- Learn about child's own nutrition, behavior, physiology and health
- Learn about study findings



You child will receive a personalized certificate of appreciation for participation in the study.

Zinc Fortification Effects on Cognitive Function, Psychoeducational Performance, Body Composition, Physical Fitness and Immune Function of Adolescents

RESEARCH DATA ONLY - Not to Be Used for Diagnostic Purposes Please see reverse side for additional information

			ID=					
	Albumin	Glucose 1	Total Cholester	ol LDL	Cholester	ol HÖLC	holesterol	
	(g/dl) '	(mg/dl)	(mg/dl)		(mg/dl)		(mg/dl)	
DATE	(3.2-4.5)	(60-100)	(< 200)		(< 130)		(37-74)	
20CT2001	4.5	95	150		78.8		57	
9DEC2001	4.6	111	140		72.8		52	
	Triglyceride	Hemoglobin	Hematocrit	Copper	Iron	Magnesium	Zinc	
	(mg/dl)	(g/dl)	(Volume %)	(ug/dl)	(ug/dl)	(mg/dl)	(ug/dl)	
DATE	(32-131)	(11.5-16.0)	(34-45)	(80-160)	(60-180)	(1.7-2.2)	(70-120)	
20CT2001	71	12.7	39	94.7	65	2.18	84.50	
9DEC2001	76	13.4	40	104.9	62	2.44	88.92	

Interpreting Laboratory (Blood) Results

The blood tests done during this study are being used to help evaluate your health status as research data. It is important to understand that it is not possible to diagnose or treat any disease or problem with these blood tests alone. All laboratory test results must be interpreted in the context of your overall health and are generally used along with other exams or tests. The doctor who is most familiar with your medical history and current condition is in the best position to interpret your individual test results and explain their implications. You are encouraged to discuss any questions or concerns about these results with your doctor.

The results of a blood test are often evaluated by comparing a sample value to a 'reference' (normal) range of values. The normal range of results for a particular test is usually established so that 95% of healthy individuals fall within that range. That means that 5% of healthy individuals fall outside the normal range, even when there is nothing wrong with them. Therefore, an abnormal test does not necessarily mean that there is something wrong with you. Statistically if you have 20 tests run on your blood, the chances are that 1 will be outside the normal range. The reference range for each of the above tests is given in parentheses below the name of the test.

It is also very important to understand that the results of a blood test may be outside the normal range for many reasons unrelated to any illness or disorder, including race, age, sex, menstrual cycle, physical activity, stress, time of day, recent food intake, non-prescription drugs (aspirin, cold medications, vitamins, etc.), prescription drugs, alcohol intake, and problems with collecting or handling the blood sample.

The reverse side contains a brief description of each of the tests we performed on your blood. It is not intended to be comprehensive or to replace discussion of your results with your health care team. Albumin is a measure of protein in your blood. This major protein is used to transport many other substances in the blood. Low values are often associated with malnutrition.

Glucose is a measure of sugar in year blood. Glucose is a product of carbohydrate metabolise that provides energy to calls for normal function. High values when fasting (8 hours without food) are associated with diabetes, but many other-dectors, such as stress or recent physical activity can also elevate blood glucose. Low values are referred to as hypoglycemia and usually occur when the body overreacts to the rise in blood sugar that occurs after eating, resulting in a rapid or excessive fall in blood sugar.

Total Cholesterol is a waxy, fat'like substance used in every cell membrane and as a base for several hormones. Our bodies need a certain esount of this substance to function properly. However, a high total cholesterol value is a sajor risk factor for heart and blood vessel diseass. There are several types of cholesterol in your blood. Low Density Lipoprotein (IDL) is referred to as 'bad' cholesterol because cholesterol deposits form in the arteries when LDL levels are high. High heartly lipoprotein (MBL) in referred to as 'good' cholesterol because it protects against heart disease by desping remove excess cholesterol deposited in arteries. Therefore, high LDL and low HDL values are strongly associated with an inoresized risk for heart disease.

<u>Triglyceride</u> is a fat in the blood whose major function is as an energy source for satabolism. High fasting values are associated with heart disease. Recent food intake may reise triglyceride values in healthy individuals.

<u>Hemoglobin</u> is an iron-rich substance (protein) in red blood cells that carries oxygen from the lungs to other cells located throughout the body. The amount of oxygen in body tissues depends on how such hemoglobin is in the red cells. Without enough hemoglobin, tissues lack oxygen, and the heart and lungs must work harder to compensate. Low values may indicate iron-deficiency sheets.

Homestorit is the ratio of red blood cell volume to total blood volume and provides information about the size, capacity and number of red blood cells. As with hemoglobin, low hematocrit velues may indicate iron-deficiency anexis.

<u>Copper</u> is an essential mineral that combines with proteins to produce enzymes critical to several body functions. Some enzymes provide energy required by biochemical reactions, while others plays role in skin pigentation and the formation of collagen and elastin necessary to maintain connective tissues in blood vessels and arteries. Therefore, low copper values may be associated with an incressed risk for coronary heart disease.

Iron is a mineral required by the body to make hemoglobin and to help transfer oxygen to the muscles. If the human body is low in iron, all body cells, particularly muscles in adults, do not function properly. Conversely, too much iron can cause injury to the heart, pancreas and toints.

Magnesium is a salt found primarily inside the cells that helps regulate energy production in the cells and is necessary for nerve function, particularly neurosuscular response and irritability. Low values are associated with impairments in these functions.

Zinc is the second-most abundant mineral in the body and a component of several hundred enzymes with extremely diverse functions. Low values may indicate inadequate distary intuke or result from strenuous exercise and have been associated with poor growth and appetite, weight loss, delayed healing of wounds and taste abnormalities. Zinc deficiency has also been linked to impaired motor, mental and social function in very young children. We are doing this study to determine whether improved zinc nutrition will improve cognitive function, psychoeducational performance, physical fitness and immune function in adolescents.

You will receive results of the analysis of the blood sample used to evaluate your child's health.

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Enterpreting the Organithes and Psychonolog Performance Summary

Computerized tests were used to exclusive motor speed/falligue and overland sportfalling, attraction/impals/with, visual and sportfal promption, which and visual sementy, and resconding. These table were administrated to such shilld before and effort the experimental treatment (drinking fortified pates or a planelso). The reserve side shows a summary of the performance for a single administration. Gummary scores for each task are of three types, due scores are average scores across all trials in the task. Standard scores are transformations of raw scores into a common scale so that scores from different tunes are is compared. Percentric scores industra the resting of raw scores relative to the scores on each task of other ITM graders surficienting is this study.

For each child, we determine the difference between performance before and performance effort the treatment, and then determine the average difference for all shidden receiving the sems treatment. Finally, we compare the treatment everage to determine whether the treatment had as effect. These plant results will not be available social all data have been collected. Moseour, results will not be available social all data have been collected. Moseour, results from a single aghiestration can be interpreted in the context of other children perticipating in this stady. Percentiles provide this information. Here was soone are trained from highest to lowert, the percentile when a revenue as the percentage of other uniforma's scores that full ships that score. For example, a percentil of lower ray score on the task; conversely, 40% had a higher score.

Not tasks have softasks that massers specific components of partonnames. For example, which massery to broken down into short-term and long-term sensory for words. Further, parformance is exactly evaluated for loth assersay and speed. Therefore, the commany often lists scores for partent (Ac correct and reaction/response time (M). Because greater speed is associated with a shorter M, a laser parametric actually reflects faster performance than a higher percentile. In the attention/insetsbetts task, laser percentiles for files three percentiles better performance. The latter M: indicates scatter performance.

As noted at the bottom of the page on the reverse sole, a child's performance on any task or text reflects many factors, including his or har sability and motivation, how he or she reads at the time, and the presence or shounce of sovironmental districtions like moire. It is generally assumed that a shid's performance or any gives occasion reflects these or or her minimum rather than exchange shell by . Further, will debt outlierthe to this state were research retains than diagnostic or climical data. Therefore, we strongly associate contion when interpreting these and all other results from their study.

JBF 05(01/2002

You will receive results of the mental and motor skills testing used to evaluate your child's cognitive function.

You will receive results of the questionnaires completed by your child, you, and your child's teacher used to evaluate your child's adaptive function.

CBCL/5-18 - Narrative Report

Clinician: RESEARCH DATA ONLY

Agency: USDA-ARS-GFHNRC

ID: Gender: Female
Birth Date: 01/22/1989 Age: 12

Date Filled: 10/01/2001 Education: Grade 7

The Child Behavior Checklist (CBCL) was completed by the child's biological mother to obtain her perceptions of the child's competencies and problems. The child's biological mother reported that the child participates in one sport and that she has interests in one hobby. She belongs to no social organizations, teams or clubs. The child's biological mother reported that the child has no jobs or chores. She reported that the child has one close friend and that she sees friends three or more times a week outside of regular school hours. The child's biological mother rated the child's school performance as average in language arts, below average in social studies, average in math, and below average in science.

The child's Total Competence score was in the clinical range below the 10th percentile for parents' ratings of girls aged 12 to 18. Her scores on the Activities and Social scales were both in the borderline clinical range (2nd to 5th percentiles), and her score on the School scale was in the normal range.

On the CBCL problem scales, the child's Total Problems and Externalizing scores were both in the clinical range above the 90th percentile for girls aged 12 to 18. Her Internalizing score was in the normal range. Her scores on the Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior syndromes were in the normal range. Her score on the Thought Problems syndrome was in the borderline clinical range (95th to 98th percentiles). These results indicate that the child's biological mother reported more problems than are typically reported by parents of girls aged 12 to 18, particularly thought problems.

ID: Gender: Female Clinician: RESEARCH DATA ONLY
Birth Date: 01/22/1989 Age: 12 Agency: USDA-ARS-GFHNRC
Date Filled: 12/19/2001 Education: Grade 7

The Child Behavior Checklist (CBCL) was completed by the child's biological mother to obtain her perceptions of the child's competencies and problems. The child's biological mother reported that the child participates in three sports and that she has interests in two hobbies. She belongs to no social organizations, teams or clubs. The child's biological mother reported that the child has three jobs or chores. She reported that the child has two or three close friends but that she sees friends less than once a week outside of regular school hours. The child's biological mother rated the child's school performance as above average in language arts, below average in social studies, average in math, and below average in science.

The child's Total Competence score was in the clinical range below the 10th percentile for parents' ratings of girls aged 12 to 18. Her scores on the Activities and School scales were both in the normal range, and her score on the Social scale was in the borderline clinical range (2nd to 5th percentiles).

On the CBCL problem scales, the child's Total Problems score was in the borderline clinical range (83rd to 90th percentiles) for girls aged 12 to 18. Her Internalizing score was in the normal range and her Externalizing score was in the clinical range above the 90th percentile. Her scores on the Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior syndromes were in the normal range. Her score on the Thought Problems syndrome was in the borderline clinical range (95th to 98th percentiles). These results indicate that the child's biological mother reported more problems than are typically reported by parents of girls aged 12 to 18, particularly thought problems.

You will receive results of the fitness testing and body composition measurements used to evaluate your child's physical fitness.

FITNESSGRAM*

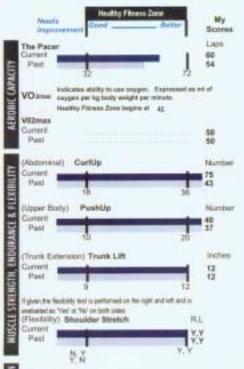
Sample Sample

Grade: 7 Age: 12

USDA GF HUMAN NUTRITION RESEARCH CENT Instructor: Sample Sample

12/07/01

Past



Way to go Sweptel Your source on all haid dones were in or adove the Healthy Fitness Zone. Scoring in the Healthy Fitness Zone will help you lack and feel better. Keep up the good recht!

Your aerobic capacity occurs is at the Healthy Pitress Zone. To resistant fitness, you should be active most styre of the recei. Try to sto aerobic sports or other activity a ristal of 30 to 60 mission each day.

Four addominal strength was very good. Sample: Manager your strength by doing currups and other resistance-exercises. 3 to 3 days a week. Remember to keep your kness best. Avoid having someone hold your feet.

Your upper body strength was very good. Sample: Maintain your fitness by doing resistance framing for areas of year upper body 2 to 3 stays each week.

Your mark attempts as in the Healthy Filtress Zyme. To maintain your filtress, sto true's lifts in a sine, controlled market 3 to 5 days each week.

Your Resibility is at the Healthy Filmose Zone. Maintain by stretching alowly 3 or 4 days each seem, holding the stretch 30 - 30 seconds.

Santale, your dooly composition is in the Healthy Fifteen. Zone. To maintain this level if is important to do physical activity on most days. You should also est a healthy shift.

Percent

Number of Days

To be healthy and II if is imported to its some physical activity almost every day. Assolet everythe is good for your healt set holy composition. Strength and fleshily exembles are good for your matches and some.

On how many of the past 7 days did you participate in any physical activity for a total of 30-60 minutes, or more, over the source of a day?

ner numbers are better somes in body congestion measurement

Percent Body Fat

Current Past

On how many of the past 7 days did you do exercises to strengther or tone your muscles?

On how many of the past 7 days did you do stretching exercises to loosen up or relex your response?

IDThe Cooper Institute for Aerobica Research

You will receive results of the dietary recalls and food frequency questionnaires completed by your child used to evaluate your child's usual dietary intake.

(Picture of the results unavailable at this time.)

Does zinc fortification improve mental function and physical fitness?

You will also receive a summary of the study findings when completed. Because this is a multi-year study, we don't anticipate results will be available until sometime in 2003. The summary will be mailed to your last known address.